REMARKS

The present Amendment amends claims 1-4 and leaves claims 5 and 6 unchanged. Therefore, the present application has pending claims 1-6.

Specification

The Examiner objected to the specification, asserting that the title is not descriptive. Applicants have amended the title, such that it is clearly indicative of the invention to which the claims are directed.

35 USC §103 Rejections

Claims 1, 2 and 4-6 stand rejected under 35 USC §103(s) as being unpatentable over U.S. Patent Application Publication No. 2002/0004890 to Ofek, et al. ("Ofek") in view of U.S. Patent No. 6,687,758 to Craft, et al. ("Craft"). This rejection is traversed for the following reasons. Applicants submit that the features of the present invention, as now more clearly recited in claims 1, 2 and 4-6, are not taught or suggested by Ofek or Craft, whether taken individually, or in combination with each other as suggested by the Examiner. Therefore, Applicants respectfully request the Examiner to reconsider and withdraw this rejection.

Amendments were made to the claims so as to more clearly describe the features of the present invention. Specifically, amendments were made to the claims to more clearly describe that the present invention is directed to a method and computer system for providing data migration, as recited for example, in independent claims 1 and 4.

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The present invention, as recited in claim 1 and as similarly recited in claim 4, provides a method for providing data migration in a computer system. Before data migration, the computer system includes one or more host computers, an old disk apparatus connected to the host computer via first and second access paths, and a new disk apparatus newly connected to the host computers via switch. The method includes a step of changing-over and connecting the first access path of the old disk apparatus to the host computers by way of the switch connected to the new disk apparatus. At this time, the host computers continue to access the old disk apparatus using the second access path. The method also includes a step of changing-over and connecting the second access path of the old disk apparatus to the host computers via the switch connected to the new disk apparatus. Another step includes executing data migration from the old disk apparatus to the new disk apparatus via the switch. The method also identifies a command for determining disk identification as an interface command from the host computers and a command for inputting and outputting data, and sending the command for determining the disk identification to the old disk apparatus. In addition to the above features, the computer system as recited in claim 4 also includes where the host computers and the old disk apparatus, the host computers and the switch, the switch and the old disk apparatus, and the switch and the new disk apparatus are connected by at least one of a fiber channel or SCSI. The prior art does not disclose all of these features.

The above described features of the present invention, as now more clearly recited in the claims, are not taught or suggested by any of the references of record. More specifically, the features are not taught or suggested by either Ofek or Craft, whether taken individually or in combination with each other.

Ofek discloses a system and method for on-line, real time, data migration from an existing storage device to a replacement storage device. However, Ofek does not teach or suggest the system and method for data migration of the present invention as recited in the claims.

An embodiment of Ofek's system for providing data migration, as shown in Fig. 5, includes a host computer 12, an old or donor storage device 14, and a new or target storage device 16. The connection 19 represents one channel, but there are four available channel interfaces on each of the host computer 12 and the donor storage device 14. Ofek's system also includes a second host computer 12A with a connection 19A as a second channel between the host computer 12A and the donor storage device 14. Each of the host computers 12 and 12A have two available channels, and assuming each of the storage units has four available channel connections, each storage unit has two unused channels. In accordance with the Ofek system, the donor (old) and target (new) storage devices are connected as a composite storage device that is coupled to a host, network or other data processing system, and the composite storage device can be formed without any significant interruption of operations in the data center. The steps for performing such a non-disruptive transfer procedure begins with the connection of the target storage device

16 to the available channels on the donor storage device 14. However, the connection 19 remains intact while new connections 28 and 28A are established to the host computers 12 and 12A to unused paths or channels.

In the present invention, an old disk apparatus is connected to the host computers via a first access path and a second access path, prior to data migration. The method for this system includes a step of changing-over and connecting the first access path of the old disk apparatus to the host computers via a switch connected to the new disk apparatus. At this time, the host computers continue to access the old disk apparatus using the second access path. Ofek does not disclose this feature. The Examiner concedes that Ofek does not disclose the use of a switch, in the manner claimed. However, not only does Ofek fail to disclose a switch, Ofek does not disclose changing-over and connecting the old disk apparatus to the host computers via a switch connected to the new apparatus, as claimed. As shown in Fig. 5, Ofek discloses a donor storage device 14 connected to host computers 12 and 12A via paths 19 and 19A, respectively. Neither path 19 nor path 19A is changed-over and connected to the host computers via a switch connected to the new disk apparatus, in the manner claimed. To the contrary, Ofek discloses where connection 19 remains intact while new connections 28 and 28A are established between the target storage device 16 and the host computers 12 and 12A (paragraph [0079]). No changing-over and connection occurs as in the present invention. Furthermore, the donor storage device 14 is connected to the target

storage device 16 by one or more paths 20a and 20B (paragraph [0030]). This path is not the same as a switch, as claimed.

Another feature of the present invention includes a step of changing-over and connecting the second access path of the old disk apparatus to the host computers via the switch connected to the new disk apparatus. Ofek does not disclose this feature. In addition to failing to disclose the use of a switch, Ofek fails to disclose changing-over and connecting a second access path of the old disk apparatus to the host computers. As previously discussed, Ofek discloses that paths 19 and 19A are connected between donor storage device 14 and host computers 12 and 12A (Fig. 5). Neither of these paths 19 and 19A is changed-over and connected to the host computers via a switch connected to the new disk apparatus, in the manner claimed.

Therefore, Ofek fails to teach or suggest "changing-over and connecting the first access path of said old disk apparatus to said host computers via said switch connected to said new disk apparatus, wherein said host computers continue to access the old disk apparatus using the second access path" as recited in independent claim 1, and as similarly recited in independent claim 4.

Furthermore, Ofek fails to teach or suggest "changing-over and connecting the second access path of said old disk apparatus to said host computers via said switch connected to said new disk apparatus" as recited in independent claim 1 and as similarly recited in independent claim 4.

The above noted deficiencies of Ofek are not supplied by any of the other references, particularly Craft. Therefore, combining the teachings of Craft with Ofek

still fails to teach or suggest the features of the present invention, as now more clearly recited in the claims.

Craft teaches port aggregation, or a method of grouping two or more network connections together at a multi-port network host to create a single logical connection. However, Craft does not teach or suggest the system and method for data migration of the present invention as recited in the claims.

In Craft, at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections, reducing the protocol processing of the host. Plural network connections can maintain, via plural INIC ports and a port aggregation switch, an aggregate connection with a network node, increasing bandwidth and reliability for the aggregate connection. Mechanisms are provided for managing this aggregate connection, including determining which port to use for each individual network connection, and migrating control of an individual network connection from a first INIC to a second INIC.

Unlike the present invention, Craft does not disclose changing-over and connecting the first access path of said old disk apparatus to the host computers via the switch connected to the new disk apparatus, where the host computers continue to access the old disk apparatus using the second access path. As shown in Fig. 1, Craft discloses a port aggregation switch. However, Craft does not disclose changing-over and connecting a first access path of an old disk apparatus to host computer by way of a switch connected to the new disk apparatus, as claimed.

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Moreover, Craft does not disclose changing-over and connecting the second access path of the old disk apparatus to the host computers via the switch connected to the new disk apparatus, as in the present invention. Craft discloses a switch. However, Craft does not disclose changing-over and connecting the second access path of the old disk apparatus to the host computers via the switch connected to a new disk apparatus, as claimed.

Therefore, Craft fails to teach or suggest "changing-over and connecting the first access path of said old disk apparatus to said host computers via said switch connected to said new disk apparatus, wherein said host computers continue to access the old disk apparatus using the second access path" as recited in independent claim 1, and as similarly recited in independent claim 4.

Furthermore, Craft fails to teach or suggest "changing-over and connecting the second access path of said old disk apparatus to said host computers via said switch connected to said new disk apparatus" as recited in independent claim 1 and as similarly recited in independent claim 4.

Both Ofek and Craft suffer from the same deficiencies with respect to the features of the present invention as recited in the claims. Therefore, combining the teachings of Craft with Ofek in the manner suggested by the Examiner does not render obvious the features of the present invention as now more clearly recited in claims 1, 2 and 4-6. Accordingly, reconsideration and withdrawal of the 35 USC §103(a) rejection of claims 1, 2 and 4-6 as being unpatentable over Ofek in view of Craft are respectfully requested.

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Claim 3 is rejected under 35 USC 103(a) as being unpatentable over Ofek in view of Craft, further in view of U.S. Patent No. 6,687,758 to Kleiman, et al. ("Kleiman"). Applicants submit that claim 3 is dependent on claim 1, and therefore, is patentable at least for the same reasons discussed previously regarding the independent claims.

The remaining references of record have been studied. Applicants submit that they do not supply any of the deficiencies noted above with respect to the references used in the rejection of claims 1-6.

In view of the foregoing amendments and remarks, Applicants submit that claims 1-6 are in condition for allowance. Accordingly, early allowance of claims 1-6 is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Mattingly, Stanger, Malur & Brundidge, P.C., Deposit Account No. 50-1417 (referencing attorney docket no. 520.43141X00).

Respectfully submitted,

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